

Title: Remote Observations of Severe Storms

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Significant Accomplishments:

A lightning detection system has been operating along the East Coast since August 1982. I believe that this will prove to be one source of ground truth for lightning flashes detected from above clouds. In addition, the first absolute spectral irradiance measurements over a wide wavelength range have been reported. A paper reporting on the observations of lightning from a U2 aircraft is now under review.

Focus of Current Research Activities:

We will be analyzing the data from the East Coast Lightning Detection Network, continuing our spectral analyses, and cooperating on further U2 aircraft measurements.

Plans for FY-85: Continue the current research activities.

Recommendation for New Research: Stengthen the ground based and U2 observations of lightning research to determine the need for continuous observations of lightning from space.

List of Publications since June 1983:

"Observations of Optical Lightning Emissions from above Thunderstorms Using A-2 Aircraft", with H.J. Christian, R.L. Frost, P.H. Gillaspy, S.J. Goodman, O.H. Vaughan Jr., M. Brook, and B. Vonnegut, **Bulletin of American Meteorological Society, 64**, (1983), 120-123.

"Some Scientific Objectives of a Satellite-Borne Lightning Mapper", with M.H. Davis, M. Brook, H. Christian, B. G. Heikes, C.G. Park, R.G. Roble, and B. Vonnegut, **Bulletin of American Meteorological Society, 64**, (1983), 114-119.

"Simultaneous Observations of Lightning Ground Strokes and Radar Reflectivity Patterns", with S.G. Geotis, **21st Conference on Radar Meteorology, September 19-23, 1983**, Edmonton, Alta., Canada, (1983), 57-58.

"An East Coast Lightning Detection Network", with R.W. Henderson and L.F. Bosart **Bulletin of American Meteorological Society**, **64**, (1983), 1029 - 1037.

"Correlated Observation of Three Triggered Lightning Flashes", with V.P. Idone, P. Hubert, L. Barret and A. Eybert-Berard, **Journal of Geophysical Research**, (1984), **89**, 1385-1394.

"Three Unusual Strokes in a Triggered Lightning Flash", with V.P. Idone, **Journal of Geophysical Research**, (1984) in press.

"Ground Truth: A Positive Cloud-to-Ground Lightning Flash", with V.P. Idone and R.W. Henderson, Submitted to **Journal of Applied Meteorology**, September (1984), in press.

"Laboratory Simulation of Venusian Lightning", with W.J. Borucki, J.S. Levine, G.A. Harvey, and W.E. Howell, **Geophysical Research Letters**, **10**, (1983), 961-964.

"Nighttime observations of thunderstorm electrical activity from a high altitude airplane", with M. Brook, C. Rhodes, O.H. Vaughan, Jr., and B. Vonnegut, **Journal of Geophysical Research**, (1984) under review.